

What is claimed is:

1. A medical device made of a biocompatible titanium alloy composition having an improved castability comprising:

- (a) about 0.01-5 wt% Bi based on the weight of the alloy composition;
- 5 (b) at least one alloy element selected from the group consisting of Mo, Nb, Ta, Zr and Hf; and
- (c) the balance Ti.

2. The medical device as set forth in claim 1, wherein said alloy composition comprises 0.1-3 wt% Bi.

- 10 3. The medical device as set forth in claim 1, wherein said alloy composition further comprises at least one eutectoid beta stabilizing element selected from the group consisting of Fe, Cr, Mn, Co, Ni, Cu, Ag, Au, Pd, Si and Sn.

4. The medical device as set forth in claim 1, wherein said titanium alloy  
15 composition is substantially free from V.

5. The medical device as set forth in claim 1, wherein the titanium alloy composition is substantially free from Al.

6. The medical device as set forth in claim 2, wherein the titanium alloy composition consists essentially of Ti and Mo; Ti and Nb; Ti and Zr; Ti, Mo and  
20 Fe; Ti, Mo and Cr; Ti, Mo and Nb; Ti, Mo and Ta; Ti, Nb and Fe; Ti, Ta and Fe; Ti, Nb and Zr; Ti, Al and Nb; Ti, Mo, Zr and Fe; or Ti, Mo, Hf and Fe, in addition to Bi.

7. The medical device as set forth in claim 1 which is a dental casting.

8. The medical device as set forth in claim 1 which is a medical implant.

- 25 9. A method for improving a castability of a titanium alloy comprising at least one alloy element selected from the group consisting of Mo, Nb, Ta, Zr and Hf, said method comprising introducing about 0.01-5 wt% Bi into said titanium alloy, based on the weight of Bi and said titanium alloy.

10. The method as set forth in claim 9, wherein 0.1-3 wt% Bi is  
30 introduced into said titanium alloy.

11. The method as set forth in claim 9, wherein said titanium alloy further comprises at least one eutectoid beta stabilizing element selected from the group consisting of Fe, Cr, Mn, Co, Ni, Cu, Ag, Au, Pd, Si and Sn.

12. The method as set forth in claim 9, wherein the titanium alloy is  
5 substantially free from V.

13. The method as set forth in claim 9, wherein the titanium alloy is substantially free from Al.

14. The method as set forth in claim 10, wherein said titanium alloy consists essentially of Ti and Mo; Ti and Nb; Ti and Zr; Ti, Mo and Fe; Ti, Mo  
10 and Cr; Ti, Mo and Nb; Ti, Mo and Ta; Ti, Nb and Fe; Ti, Ta and Fe; Ti, Nb and Zr; Ti, Al and Nb; Ti, Mo, Zr and Fe; or Ti, Mo, Hf and Fe.

15. A method of using a titanium alloy composition in making a medical device comprising casting a titanium alloy composition comprising

- (a) about 0.01-5 wt% Bi based on the weight of the alloy composition;
- 15 (b) at least one alloy element selected from the group consisting of Mo, Nb, Ta, Zr and Hf; and
- (c) the balance Ti.

16. The method as set forth in claim 15, wherein said alloy composition comprises 0.1-3 wt% Bi.

20 17. The method as set forth in claim 15, wherein said alloy composition further comprises at least one eutectoid beta stabilizing element selected from the group consisting of Fe, Cr, Mn, Co, Ni, Cu, Ag, Au, Pd, Si and Sn.

18. The method as set forth in claim 15, wherein said titanium alloy composition is substantially free from V.

25 19. The method as set forth in claim 15, wherein the titanium alloy composition is substantially free from Al.

20. The method as set forth in claim 16, wherein the titanium alloy composition consists essentially of Ti and Mo; Ti and Nb; Ti and Zr; Ti, Mo and Fe; Ti, Mo and Cr; Ti, Mo and Nb; Ti, Mo and Ta; Ti, Nb and Fe; Ti, Ta and Fe;  
30 Ti, Nb and Zr; Ti, Al and Nb; Ti, Mo, Zr and Fe; or Ti, Mo, Hf and Fe, in addition to Bi.

21. The method as set forth in claim 15, wherein said medical device is a dental casting.

22. The method as set forth in claim 15, wherein said medical device is a medical implant.